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AUTHOR Glover, Elbert D.
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ABSTRACT

Based on the need for an investigation of the impact of health education throughout Texas, a research proposal was prepared and submitted to the Texas Christian University Research Foundation in the fall of 1978. The 2-year study was limited to freshman students enrolled in the 123 colleges and universities in Texas. By selecting freshman students, it was believed that the results of the study would prove useful in assessing the effectiveness of current school health instructional programs in Texas elementary and secondary public schools. The Kilander-Leach Health Knowledge Test, the study instrument, consists of 100 multiple-choice questions which are divided into 11 health areas: (1) personal health; (2) community health; (3) nutrition; (4) family living; (5) first aid; (6) safety; (7) consumer health; (8) chronic disease; (9) mental health; (10) stimulants and depressants; and (11) communicable disease. Statistical data obtained from the survey are presented in tabular form. In a discussion of the implications of the findings of the study, the point is made that modifications need to be made in existing Texas health education programs. When analyzed by content areas, the results indicated that, in terms of knowledge, respondents did not display strength or even moderate strength in any content area. An analysis of the findings is followed by recommendations for the improvement of existing health programs in the public schools and in institutions of higher education. (JD)

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THE TEXAS SCHOOL HEALTH EDUCATION STUDY

A Summary Report

A state wide study evaluating the health knowledge of 3,529 freshmen students enrolled at 35 institutions of higher education in Texas during the 1978-79 academic year.

Funded by The Texas Christian University Research Foundation.

SP 021 271

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THE TEXAS SCHOOL HEALTH EDUCATION STUDY

Elbert D. Glover, Ph.D., FASHA
Department of Kinesiological Studies
Director of Health Education
Texas Christian University
Fort Worth, Texas 76129

A MESSAGE FROM THE PROJECT DIRECTOR:

As Director of the Texas School Health Education Study, it gives me great pleasure to submit this summary report. The study, the first of its type in Texas, represents the culmination of approximately 2 years of effort by a number of individuals. Due to the volume of data generated by the study, the report has purposely been prepared to provide a descriptive overview of the background, methodology, and findings of the project. Much more detailed analysis of the data has been prepared for various publications. Individuals desiring further information should feel free to contact the study office.

Though the study has officially terminated, the impact of the project has begun to be felt throughout the state. For the first time, educators have available a source of data to utilize in planning and improving health education programs at both the public school and college levels. The time has come to initiate serious action to improve the health of Texas children and young adults. It is to this goal that the study is dedicated. Finally, the project is designed to be an ongoing study and will be conducted every five years to check the progress being made in health education in secondary schools in Texas.

It should also be noted that the Director of the study is responsible for the contents of this summary report. Recognizing the sampling technique and instrument limitations of this study, caution must be exercised in drawing conclusions concerning the status of health education in the state of Texas. Moreover, the conclusions reached should not be interpreted as representing the view of health educators or any health education organization or body in Texas.

Elbert D. Glover, Jr.
December 1, 1980

INTRODUCTION

The ever increasing concern and interest in health by millions of Americans is evidence of the appropriateness and timeliness of affording health education its appropriate place as a more integral part of school curricula at all levels. In the state of Texas, a growing recognition of the importance of health education is reflected in the evolution of state educational regulations. These are:

1. In 1969, the regulation that both health and physical education be required for graduation from high school in Texas was mandated.

2. In 1972, health education received approval as a subject for teacher certification.

3. In 1977, Texas adopted a regulation making health and physical education separate subjects in teacher preparation programs.

4. Beginning in 1983, Texas will no longer employ the health and physical education major as a combined teacher emphasis unless the individual has been certified independently in each of these fields. (Grandfathered teachers may still teach health education.)

As a result of these events, health educators from various colleges and universities within the state of Texas have, on numerous occasions, discussed the effectiveness of this legislation. These discussions have revealed an absence of published information regarding the health knowledge achieved by students graduating from Texas high schools.

ORIGIN OF STUDY

In 1976, the Director of this report collaborated in a study* that investigated the status of health education experiences in senior high schools in the state of Texas. This 1976 study identified the type of health education experienced in Texas high schools; it did not gather data pertaining to the health knowledge acquired by the students. Upon assuming the position as Director of Health Education at Texas

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*Merki, Donald J. and Elbert D. Glover, "Health Education Experiences in Texas Senior High Schools." Texas Association for Health, Physical Education and Recreation Journal, Winter Issue, Feb. 1976, Vol. XLVI, No. 2, pp. 6-7, 44.

Christian University in September of 1978, this same author attempted to ascertain the quality of health instructional programs in Texas schools and colleges. This proved to be a difficult task because of the absence of data related to the status of Texas school health education programs. Further reinforcement of the need for an investigation came through the discovery that no significant research had been published relative to the quality of health instructional programs in Texas educational institutions since the passage of the 1969 regulation requiring both health and physical education be required for graduating seniors in Texas high schools.

Based on the apparent need for an investigation of the impact of health education throughout the state, a research proposal entitled "The Texas School Health Education Study" was prepared and submitted to the Texas Christian University Research Foundation in the Fall of 1978. Financial support was granted on October 13, 1978, and the investigation was initiated immediately.

IDENTIFICATION OF THE SAMPLE

Following a review of the potential population of college and university students in Texas, the study was delimited to freshmen students enrolled in the 123 colleges and universities in Texas; this included all private and state colleges and universities of which 35 institutions chose to participate. The institutions participating in the study are located geographically throughout the State. The majority of students attending these colleges and universities are graduates from Texas high schools.

By selecting freshmen students, it was believed that the results of the study would prove useful to educators throughout the state in assessing the effectiveness of current school health instructional programs. Since all of the freshmen students tested were graduates of Texas schools, it was assumed that the performance of the subjects would tend to reflect the impact of previous school health education experiences since a majority of the subjects had received no formal health instruction at the college level.

One procedure of the research project was to sample 5% of the freshmen students enrolled in the 123 colleges and universities throughout the state, during the second semester of the 1978-79 academic year. The collective freshmen enrollment at the selected 123 colleges and universities during the second semester of the 1978-79 academic year was 120,172 as reported by the institutions. The 3,529 subjects participating in the study represented 3% of the total reported freshmen enrollment at the 123 community colleges and universities in Texas.

Of the 123 colleges and universities asked to participate in the study, 35 participated. Many schools did not respond (N=75). Others chose not to participate (N=4), while others were unable to

administer the test on their respective campuses prior to the end of the testing period (N=9). The collective freshmen enrollment during the second semester of the 1977-78 academic year at the 35 participating institutions was 63,714 as reported by the institutions. The 3,529 who participated in the research project represented 5.5% of the total reported freshmen enrollment at the 35 institutions.

SELECTION OF THE INSTRUMENT

The Kilander-Leach Health Knowledge Test (1972 Revision) was selected as the instrument to be employed in the study. Key factors considered in choosing the instrument were the large data base of approximately 100,000 subjects used to refine the test and the fact that the 1972 Revision of the instrument was available. The test consists of 100 multiple-choice questions which are divided into the following eleven health areas: (1) personal health, (2) community health, (3) nutrition, (4) family living, (5) first aid, (6) safety, (7) consumer health, (8) chronic disease, (9) mental health, (10) stimulants and depressants, and (11) communicable disease. A total score is also obtained.

ARRANGEMENT OF THE TESTING SCHEDULE

Following the identification of the sample and the selection of the appropriate evaluation instrument, a testing schedule was arranged. Letters were sent to all colleges and universities in the state requesting their participation in the study. The letters explained the purpose and nature of the research project, sought a commitment to participate in the study from a representative of each institution, and requested information related to the most convenient time periods to administer the test. On the basis of the responses from the representatives of the participating colleges and universities, a test administration schedule was arranged. The schedule was designed so that testing could begin during the fourth week of the second semester of the 1978-79 academic year, and be completed by the end of the semester.

PRESENTATION OF THE DATA

The data are categorized and presented in a series of tables representing various aspects of the data collected in this investigation. Since some subjects did not complete all items included in the demographic data form administered along with the Kilander-Leach Health Knowledge Test, calculations are based on the responses of all subjects answering a given question.

In addition to the reporting of descriptive information, tests of significance were conducted for various demographic categories. In a number of categories statistical significance was noted and is reported. However, the extreme closeness of the mean scores in some categories and the presence of extremely large and varied sample sizes, led to the conclusion that, while significance existed in a statistical sense, the differences may not have been meaningful in a practical sense. It was felt that the t-test and one-way analysis of variance procedures utilized in the comparisons may have resulted in a deflated alpha level due to the large and varied sample sizes. As a result, an inordinate amount of weight was assigned to what would have otherwise been a minimal difference in mean test scores. For this reason, no specific between-group comparisons were conducted. In addition, the mean test scores recorded for the various demographic categories were viewed somewhat conservatively since subjects were omitted from the calculation of the mean for failing to respond to the item being analyzed.

TABLE 1

GENERAL DESCRIPTIVE STATISTICS
DATA RELATED TO THE STUDY

Number of Subjects	3,529
Mean Score	51.66
Median Score	53.18
Mode	58.00
Standard Deviation	16.00
Range of Scores	0-86
Test Reliability[1]	.80

[1]Kilander-Leach report a split half reliability coefficient for college freshmen in the normative data base using the Sperman-Brown Technique.

TABLE 2

FREQUENCY DISTRIBUTION AND PERCENTILE
EQUIVALENTS OF RAW TEST SCORES FOR ALL SUBJECTS

PERCENTILE	SCORE	FREQUENCY
100	82-86	21
99	80-81	33
98	78-79	43
97	77	30
96	75-76	67
95	74	60
93	73	50
91	72	47
90	71	48
89	70	81
86	69	83
84	68	84
82	67	67
80	66	72
78	65	77
76	64	87
73	63	81
71	62	68
69	61	75
67	60	70
65	59	83
62	58	91
60	57	89
57	56	81
55	55	78
53	54	75
51	53	73
49	52	74
47	51	82
44	50	68
42	49	88
40	48	65
38	47	75
36	46	60
34	45	72
32	44	62
30	43	64
28	42	58
27	41	45
26	40	58
24	39	52
22	38	48
21	37	57

TABLE 2 - Continued

PERCENTILE	SCORE	FREQUENCY
19	36	50
18	35	48
17	34	49
15	33	50
14	32	40
13	31	40
12	30	43
10	29	39
9	28	35
8	27	34
7	26	34
6	25	32
5	23-24	44
4	22	26
3	20-21	36
2	17-19	36
1	10-16	34
0	0-9	17

TABLE 3

PERCENTILE COMPARISONS BETWEEN KILANDER-LEACH PROJECTED NORMS AND STUDY SUBJECTS COMPLETING A HIGH SCHOOL HEALTH COURSE

PERCENTILE	TOTAL RAW SCORE	FREQUENCY	KILANDER-LEACH PROJECTED NORMS[1]
100	82-86	19	99.5
99	80-81	29	--
98	78-79	38	--
97	76-77	51	--
96	75	31	--
95	74	49	90
93	73	47	--
91	72	34	--
90	71	41	84
89	70	71	--
87	69	74	--
84	68	76	--
82	67	56	--
80	66	64	75
78	65	71	--
76	64	78	--
73	63	73	--
71	62	60	--
69	61	67	50
67	60	60	--
65	59	73	--
63	58	82	--
60	57	69	--
58	56	66	--
56	55	70	--
53	54	68	25
51	53	65	--
49	52	63	--
47	51	72	16
45	50	55	--
43	49	80	--
40	48	60	--
38	47	71	10
36	46	57	--
34	45	60	--
32	44	60	--
30	43	56	--
29	42	50	--
27	41	42	--
26	40	49	--
24	39	48	--
22	38	42	--

TABLE 3 - Continued

PERCENTILE	TOTAL RAW SCORE	FREQUENCY	KILANDER-LEACH PROJECTED NORMS[1]
21	37	53	--
19	36	45	--
18	35	44	--
17	34	42	--
15	33	40	--
14	32	38	--
13	31	34	--
12	30	37	--
10	29	36	--
9	28	32	--
8	27	32	--
7	26	29	0
6	25	28	--
5	23-24	40	--
4	22	22	--
3	20-21	31	--
2	17-19	31	--
1	11-16	26	--
0	0-10	14	--

[1]Kilander-Leach projected norms for college freshmen based on a national sample of over 100,000.

TABLE 4

PERCENTILE COMPARISONS BETWEEN KILANDER-LEACH PROJECTED NORMS AND STUDY SUBJECTS COMPLETING A COLLEGE HEALTH COURSE

PERCENTILE	TOTAL RAW SCORE	FREQUENCY	KILANDER-LEACH PROJECTED NORMS[1]
100	82-86	7	90
99	80-81	8	--
98	78-79	14	84
97	77	6	--
96	76	6	--
95	74-75	23	75
92	73	12	--
91	72	14	--
89	71	12	--
88	70	21	50
85	69	27	--
82	68	22	--
80	67	15	--
78	66	19	--
76	65	20	--
73	64	24	--
71	63	19	--
68	62	14	--
67	61	12	25
65	60	18	--
63	59	19	--
61	58	28	--
58	57	18	16
55	56	20	--
53	55	20	--
51	54	26	10
48	53	10	--
46	52	17	--
44	51	17	--
42	50	13	--
41	49	20	--
39	48	19	--
36	47	22	--
34	46	15	--
32	45	15	--
30	44	20	--
28	43	16	--
26	42	11	--
25	41	13	--
23	40	13	--
21	39	16	--
20	38	11	--

TABLE 4 - Continued

PERCENTILE	TOTAL RAW SCORE	FREQUENCY	KILANDER-LEACH PROJECTED NORMS[1]
18	37	17	--
16	36	7	--
15	35	11	0
14	34	10	--
13	33	8	--
12	32	10	--
11	31	9	--
10	30	8	--
9	29	6	--
8	28	9	--
7	26-27	10	--
6	25	12	--
4	23-24	11	--
3	21-22	7	--
2	16-20	11	--
1	13-15	5	--
0	0-12	4	--

[1]Kilander-Leach projected norms for college freshmen based on a national sample of over 100,000.

TABLE 5

NUMBER, PERCENTAGE AND MEAN TEST SCORE
OF SUBJECTS BY AGE

AGE	NUMBER	PERCENT	MEAN SCORE[1]
17	39	1.1	48.03
18	910	25.8	53.42
19	1,135	32.3	50.89
20	459	13.0	48.25
21	280	7.9	50.79
22	154	4.4	49.08
23	95	2.7	52.63
24	55	1.6	52.31
25-29	154	4.4	55.12
30-39	119	3.4	57.03
40 and over	50	1.4	59.58
Missing	79	2.2	--

[1]A statistically significant difference was noted at the P<.0001 level of significance (F=7.55 w/10 and 3,518 df ANOVA technique).

TABLE 6

NUMBER, PERCENTAGE AND MEAN SCORE BY
SELF-DECLARED ETHNIC GROUP

	NUMBER	PERCENT	MEAN SCORE[1]
Black American	600	17.0	42.50
Caucasian American	2,266	64.2	55.05
Indian American	30	.9	43.87
Mexican American	475	13.5	47.43
Other	128	3.6	51.18
Missing	30	.9	--

[1]Statistically significant difference noted at less than .001 level of significance (F=93.66 w/4 and 3,494 df ANOVA technique).

TABLE 7

NUMBER, PERCENTAGE AND MEAN SCORE BY SEX

	NUMBER	PERCENT	MEAN SCORE[1]
Male	1,711	48.5	50.43
Female	1,808	51.2	52.91
Missing	10	.3	--

[1]Statistically significant difference noted at less than .001 level of significance (F=21.33 w/1 and 3,517 df ANOVA technique).

TABLE 8

NUMBER, PERCENTAGE AND MEAN SCORE BY
POPULATION OF HOME TOWN

	NUMBER	PERCENT	MEAN SCORE[1]
0 - 5,000	958	27.1	49.33
5,001 - 15,000	447	12.7	50.26
15,001 - 30,000	284	8.0	52.79
30,001 - 50,000	142	4.0	49.70
50,001 - 75,000	138	3.9	53.59
75,000 - and over	1,560	44.2	53.30

[1]A statistically significant difference was noted at less than a .001 level of significance (F=9.24 w/5 and 3,523 df ANOVA technique).

TABLE 9

NUMBER, PERCENTAGE AND MEAN SCORE
BY MARITAL STATUS

	NUMBER	PERCENT	MEAN SCORE[1]
Single	3,015	85.4	51.32
Married	399	11.3	53.68
Divorced	84	2.4	53.99
Separated	26	.7	53.73
Missing	5	.1	--

[1]Statistically significant difference was noted at the .02 level of significance (F=3.30 w/3 and 3,520 df ANOVA technique).

TABLE 10

NUMBER, PERCENTAGE AND MEAN SCORE BY
HIGH SCHOOL GRADE POINT AVERAGE

	NUMBER	PERCENT	MEAN SCORE[1]
3.50- 4.00	1,131	32.0	57.72
3.00 - 3.49	1,496	42.4	50.22
2.50 - 2.99	812	23.0	46.78
Below 2.49	88	2.5	42.94
Missing	2	.1	--

[1]A statistically significant difference was noted at less than a .001 level of significance (F=99.79 w/3 and 3,523 df ANOVA technique).

TABLE 11

NUMBER, PERCENTAGE AND MEAN SCORE BY PRIOR HEALTH EDUCATION EXPERIENCE

	NUMBER	PERCENT	MEAN SCORE[1]
No Formal Course	568	16.1	51.13
High School Course	2,258	64.0	51.56
College Course	126	3.6	50.06
Both High School & College Course	572	12.2	53.05
Missing	5	.1	--

[1]No statistically significant difference was noted.

TABLE 12

RESPONSES TO THE QUESTION "DO YOU BELIEVE THAT A QUALITY HEALTH EDUCATION COURSE WOULD BE BENEFICIAL TO HIGH SCHOOL STUDENTS?"

	NUMBER	PERCENT
Yes	3,360	95.2
No	161	4.6
Missing	8	.2

TABLE 13

RESPONSES TO THE QUESTION "DO YOU BELIEVE THAT A QUALITY HEALTH EDUCATION COURSE WOULD BE BENEFICIAL TO COLLEGE STUDENTS?"

	NUMBER	PERCENT
Yes	3,094	87.7
No	402	11.4
Missing	33	.9

TABLE 14

RESPONSES TO THE QUESTION "DO YOU BELIEVE THAT YOUR OWN HIGH SCHOOL HEALTH EDUCATION COURSE WAS A QUALITY COURSE?"

	NUMBER	PERCENT
Yes	2,339	66.3
No	1,166	33.0
No Course Completed	24	.7

TABLE 15

RESPONSES TO THE QUESTION "DO YOU BELIEVE THAT YOUR OWN COLLEGE HEALTH EDUCATION COURSE WAS A QUALITY COURSE?"

	NUMBER	PERCENT
Yes	1,818	51.5
No	227	6.4
No Course Completed	1,484	42.1

TABLE 16

NUMBER OF QUESTIONS, MEAN SCORE AND EQUIVALENT PERCENTAGE OF STUDENT PERFORMANCE BY CONTENT AREA OR SUBSCALE

CONTENT AREA	NUMBER OF QUESTIONS	MEAN SCORE
Personal Health	21	9.49
Community Health	5	2.24
Nutrition	9	4.97
Family Living	7	3.94
First Aid	7	4.08
Safety	3	1.71
Consumer Health	11	6.13
Chronic Disease	7	4.26
Communicable Disease	14	7.07
Mental Health	7	3.46
Stimulants & Depressants	9	4.31
	100	51.66[1]

[1]The raw score of 70 is equal to the 50th percentile, while a mean of 51.66 is equal to the 9th percentile.

TABLE 17

SAMPLE SIZE, MEAN SCORE, AND STANDARD DEVIATION
FOR 35 PARTICIPATING INSTITUTIONS

INSTITUTION[1]	SAMPLE SIZE	MEAN SCORE	STANDARD DEVIATION
Alvin Community College	182	56.18	15.02
Bee County College	6	56.33	12.74
Cisco Junior College	124	41.35	15.37
Del Mar College	170	48.83	14.95
Eastfield Community College	41	60.88	10.96
East Texas State University	49	41.80	15.21
El Paso Community College	37	57.05	15.28
McLennan Community College	49	49.51	13.87
McMurry College	176	48.97	16.83
Midwestern State University	11	50.55	9.95
Paris Junior College	32	48.00	12.91
Paul Quinn College	56	36.57	13.69
Rice University	245	69.38	9.62
Richland Community College	21	56.19	13.42
Sam Houston State University	81	56.68	13.12
San Jacinto College	63	51.62	14.41
South Plains College	98	49.32	12.18
Southern Methodist University	212	57.95	13.31
Southwestern University	67	59.58	13.84
Stephen F. Austin State University	56	56.91	7.95
Sul Ross State University	63	43.83	12.18
Tarrant County Junior College	202	49.67	16.42
Temple Junior College	34	52.56	12.95
Texas A & I University	99	47.44	13.94
Texas A & M University	45	56.73	14.10
Texas Christian University	105	55.15	14.88
Texas Lutheran College	72	54.19	14.51
Texas Southern University	249	41.80	11.84
Texas State Technical Institute	13	41.69	11.17

TABLE 17 - Continued

INSTITUTION[1]	SAMPLE SIZE	MEAN SCORE	STANDARD DEVIATION
Texas Tech University	312	46.86	16.13
Texas Wesleyan College	14	61.29	14.01
University of Texas at Arlington	127	55.72	14.73
University of Texas at El Paso	339	50.39	16.04
Vernon Regional Junior College	47	48.60	19.42
West Texas State University	32	55.25	12.38
TOTAL	3,529	51.61	16.00

[1]Calculations are based on the data provided by the 35 participating institutions for the freshman class at each institution during the 1978-79 academic year.

KEY FINDINGS

The following is a summary of the results of this study:

1. The mean composite test score (M=51.66) for the overall sample (N=3,529) corresponded to the 9th percentile based on the norms reported by the authors of the test (50th percentile associated with a raw score of 70),

2. Students 25 years of age and older recorded a higher mean test score (N=402; M=57.28) than did younger students (N=3,127; M=50.68),

3. Female students recorded a higher mean test score (N=1,808; M=52.91) than did male students (N=1,711; M=50.43),

4. Caucasian Americans recorded the highest mean test score (N=2,266; M=55.05) followed by Other (N=128; M=51.18), Mexican Americans (N=475; M=47.43), Indian Americans (N=30; M=43.87) and Black Americans (N=600; M=42.50) of the five self-declared ethnic groups,

5. Married, divorced, or separated students recorded a higher mean test score (N=509; M=53.80) than did single students (N=3,015; M=51.32),

6. Students whose home towns had populations above 50,000 recorded a higher mean test score (N=1,698; M=53.45) than did students from smaller sized home towns (N=1,831; M=50.52),

7. Mean test scores of students increased as high school grade point averages (GPA) improved (GPA 3.5-4.00, M=57.72; GPA 3.00-3.49, M=50.22; GPA 2.50-2.99, M=46.78; and GPA below 2.49, M=42.94),

8. Prior health education experience produced no mean test score difference between students having "no formal course", a "high school course", a "college course", or both "high school and college courses",

9. Students overwhelmingly supported the value of including a quality health education course at both the high school (95% in favor) and college (87% in favor) levels,

10. Of the 2,258 students having completed only a high school health education course, 66% rated it as a quality course,

11. Of the 698 students having completed a college health education course, 51% rated it as a quality course, and

12. A wide range existed in the mean test scores (low-M=~~41.35~~ 36.57 to high-M=69.38) recorded for the 35 institutions participating in the study.

IMPLICATIONS OF THE FINDINGS

When the findings of this study are reviewed, it is evident that modifications need to be made in existing health education programs within the state of Texas. The results of the Kilander-Leach Health Knowledge Test when analyzed by content areas indicated that, in terms of knowledge, the subjects did not display strength or even moderate strength in any content area, and according to Kilander-Leach interpretations, the subjects were weak in all areas (Table 16). The fact that the mean total score (M=51.66) is equivalent to the 9th percentile is an indication of this weakness.

It is noted (Table 5) that older subjects scored significantly higher than younger subjects. The lowest score (M=48.03) was recorded in the seventeen year old group and the highest score (M=59.58) in the forty and over group. This is mildly surprising as theoretically health education touches virtually every Texas graduate today whereas twenty tears ago little health education in the public schools was available. It is defensible that the older one becomes, he/she not only becomes more mature but becomes more aware of his/her health.

There was a significant difference in the test scores of the self-declared ethnic groups with white students (M=55.05) scoring significantly higher than the black (M=42.50), Chicanos (M=47.43), Indian (M=43.87) or Other (M=51.78) students. Despite these differences, all groups separately and combined obtained low scores in all areas of the Kilander-Leach Health Knowledge Test. Inequalities in the scores for these groups probably reflects differences in the reading skills of the various ethnic groups.

Females scored (M=52.91) significantly higher than males (M=50.43). This is generally expected as females tend to score higher on verbal skills and have more exposure to health information than do males.

There was a significant statistical difference in mean scores of subjects from towns with differing populations. Table 8 generally indicates that students from the most populated areas had the larger mean score. Subjects from small towns (0-5,000; M=49.33) as subjects from larger cities (30,001-50,000; M=49.70), (50,001-75,000; M=53.30) score much higher. This can more clearly be understood as larger cities usually have the more comprehensive school health education programs whereas smaller cities simply do not have the resources.

There was a significant statistical difference in scoring in regard to marital status. There was little difference in subjects who were married (M=53.68), divorced (M=53.95) or separated (M=53.73), but when compared to single (M=51.32) subjects there was a statistically significant difference. There was also a significant statistical difference and a correlation in grade point average. The higher

the grade point average, the greater the score. Table 10 reflects distinct statistical difference in mean scores in relationship to grade point average.

The fact that subjects who had completed a high school health education course scored higher (M=51.66) than subjects who completed a college health education course (M=50.06) was surprising. Also the fact that subjects who had no formal course (M=51.13) and score higher than subjects who had completed a college health education course was somewhat disappointing. In addition, the fact that subjects who had completed a health education course at the college level only, recorded the lowest test mean score of the four health education academic experience categories was rather disconcerting.

In analyzing the preceding developments, two considerations would appear to be worth noting. First, since existing research generally supports the contention that quality health instruction can significantly improve the level of health knowledge, it would seem appropriate to conclude that health education courses completed by subjects at the high school level were only marginally effective as offered. An explanation for the marginal effectiveness of high school instructional programs may relate to the grandfather clause as Texas still has individuals teaching health who are either not certified or have little training in the area. Also, a number of school systems throughout the state continue to consider health education as either an elective course or as a part of the physical education curriculum. Such a situation obviously fails to actively promote the development and implementation of quality health education curricula. Therefore, until health education is taught by interested and competent health education specialists, it would seem reasonable to expect that only marginally effective secondary school health instructional programs will continue to persist throughout the state in the future. The second consideration concerns health instruction at the college level. Based on the premise that quality health instruction can significantly improve the level of health knowledge, the results of the Texas School Health Education Study support the conclusion that basic health education courses completed by subjects at the college level were ineffective as offered. The conclusion is upheld by the fact that subjects who completed a health education class at the college level actually recorded a lower mean test score than those subjects who had completed a course at the high school level only. Furthermore, the ineffective college level health education course conclusion is supported by the fact that subjects who had completed such a course recorded a mean score of over one point lower than subjects who had never conpleted a formal health education course. The generally ineffective nature of the basic college course curricula is most interesting in light of the fact that 87.7% of the subjects who had completed a college class believed that their course had been a "quality" one. Thus it would appear that in addition to a need for improved college level basic health education courses, the need for clearer student perception of what constitutes a qualtiy health course exists. It would seem reasonable to expect that a clearer perception could be realized in the future

if quality high school health education courses were required, offered as separate classes, and taught by interested and competent health education specialists.

As stated previously, the study was not primarily intended to be comparative or inferential in nature with regard to the participating institutions. However, it should be observed that subjects who had completed a high school health course and subjects who had completed a college health course both scored below the projected norms for these groups. Likewise, the grand mean score of 51.66 out of 100 for the total sample was considerably below the norm. Also, while it was not the purpose of the study to compare institutions or to evaluate the publically funded community colleges and universities of Texas, it must be observed that a wide range existed in the mean scores of the 35 institutions participating in the study. In actuality, the performance of the freshmen subjects is more a reflection of their public school experiences since only 698 freshmen subjects (24.69) had completed a college health course.

As stated in the cover letter of the report, the primary purpose of the study was to evaluate the health knowledge of the freshmen subjects to determine areas of strength and weakness in health knowledge for the purpose of improving the quality of health instruction programs in the state. Though the study was conducted under strict fiscal and logistical limitations, every effort was made to plan and conduct a project of the maximum possible scope given the existing restrictions. While a more limited approach to the study was possible, a goal of the study was to provide an opportunity for every interested state institution to be actively involved in the study and to increase the awareness of health education through exposure to and participation in the research project.

The size of the sample of 3,529 subjects and the fact that the sample represents almost 6% of the total freshman enrollment during the second semester of the 1978-79 academic year at the 35 colleges and universities of Texas lends impetus to the findings of the study. Since a conscious effort was made to select subjects as randomly as possible on each of the 35 campuses, there is no reason to believe that the sample is essentially atypical. (A review of Tables 6 and 7 will further substantiate this point.) As would be expected with such a large sample, the test scores were normally distributed, and the test reliability coefficient was acceptable.

IN RESPONSE TO THE CHALLENGE

The Texas School Health Education Study has provided insight into the health knowledge of over 3,529 freshmen college students in Texas. An examination of the study findings suggests that health education programs within the state are in need of critical review. At this time, it is essential that attention be focused on this preceding general, yet important conclusion, instead of on the specific findings of the study.

Support for health education among college and university educators in Texas is evidenced by the fact that 35 of the 123 institutions of higher learning asked to participate in the study became actively involved. In addition, students participating in the study overwhelmingly endorsed the value of offering health education courses in both high schools and colleges.

If the state of Texas is to keep abreast of the growing national interest in health education, existing programs must be improved and new programs must be established. Improving the health of the young people in Texas public schools and colleges must become a priority. With the preceding thoughts in mind, the following recommendations are offered:

1. Passage of statewide TEA guidelines by the Coordinating Board which would include accurate health knowledge, the development of positive health attitudes, and the application of favorable health practices among the children and young adults of Texas. Such guidelines should establish a state-wide curriculum framework that would provide a comprehensive, sequential health education program for all students in grades K-12 allowing for sufficient flexibility to deal with student needs, interests, comprehensive abilities and cultural/familiar backgrounds as well as with local community mores. More specifically the legislation should entail:

    a. Provision for every elementary child to have daily rather than "weekly" instruction in health education as a separate subject.

    b. Provision for every middle school/junior high school student to have a minimum of one consecutive 18 week semester (90 class sessions) of basic health education as a separate subject (preferably in grade 8).

    c. Provision for every senior high school student to have a minimum of one 18 week semester (90 "consecutive" class sessions) of advanced health education, as a separate subject (preferably grade 10).

    d. Provision for every college student to have a minimum of one 3 semester hour health education course (preferably during the freshman year). Such a course would need to be of higher quality than most courses currently appear to be.

    e. Provision for individuals enrolled in teacher preparation programs to complete an additional health education course dealing with the organization and administration of the total school health program.

f. Provision for practicing elementary teachers to receive 6 hours of preparation in health education through graduate courses or in-service programs.

g. Requirement that all health instruction at the secondary level, like other academic subjects, be taught by certified health education specialists.

h. Revision of the Texas secondary school health education teacher certification requirements to include a competency based test to insure qualified health teachers. Compliance with the certification revision should be required. Failure to do so should result in action prohibiting a teacher from continuing to provide health instruction until the revised certification requirements were met. Strict enforcement of the revised requirements would be essential if the development and maintenance of quality health education programs were to be assured. One problem would be enforcement as both the Texas Education Agency and the Coordinating Board do not view themselves as enforcement agencies.

i. Encouragement of school administrators (grades K-12) to better familiarize themselves with the organization and administration of the total school health program through special graduate classes or in-service offerings.

j. Encouragement of public community college and university educators who do not have sufficient graduate level professional preparation in health education courses to increase their expertise through graduate courses and in-service programs.

k. Designate a consultant(s) for health education in the State Department of Education for coordinating health education throughout the state.

l. Generate more research to develop sequential curricula appropriate to specific needs or defined through research.

m. Generate funds to provide for a state committee of health educators to oversee implementation and compliance of regulations and certifications.

n. Development and/or revision of the Kilander-Leach Health Knowledge Test.

Now that the Texas School Health Education Study Summary Report has been published and is available for scrutiny by state educators, legislators, health professionals, and concerned citizens,

health educators are faced with a challenge of great magnitude. Obviously, something must be done to promote improvement of present school health education programs if Texas children and young adults are to be provided with the opportunity to understand, achieve and maintain the quality health they all deserve. If enough key individuals become willing to serve as "change agents", Texas school health instructional programs can be significantly improved.

ADMINISTRATIVE REPRESENTATIVES FOR 35 PARTICIPATING INSTITUTIONS

The following individuals coordinated and/or assisted in the administration of the Kilander-Leach Health Knowledge Test.

Alvin Community College	Don Childs
Bee County College	John Gratton/Bob Leach
Cisco Junior College	Ace Prescott
Del Mar Junior College	Patricia Schmitt
Eastfield Community College	Lee Groupman
East Texas State University	Ken Morgan
El Paso Community College	Jim Quiocho
McLennan Community College	James Burroughs
McMurry College	Greg Feris
Midwestern State University	Joe M. Henderson
Paris Junior College	March Mattier
Paul Quinn College	Phyllis Love
Rice University	Nicholas K. Iammarino
Richland Community College	John L. Jagers
Sam Houston State University	Ruth M. Cady
San Jacinto College	Dorothy L. Brown
South Plains College	Larry Roberts
Southern Methodist University	Ila Kay Guraedy
Southwestern University	Tex L. Kassen
Stephen F. Austin State University	Dorothy Allen/Carl L. Knight
Sul Ross State University	Chet Sample
Tarrant County Junior College	William M. Bishop
Temple Junior College	Jim D. Brown
Texas A & I University	Janice C. Williams
Texas A & M University	Carl W. Landiss
Texas Christian University	George Harris
Texas Lutheran College	Kathryn M. Yandell
Texas Southern University	Edward P. Norris
Texas State Technical Institute	Linda Blansit
Texas Tech University	Herman B. Segrest

ADMINISTRATIVE REPRESENTATIVES FOR 35
PARTICIPATING INSTITUTIONS - Continued

Texas Wesleyan College	Frank Fultz
University of Texas at Arlington	Rusty Pippin
University of Texas at El Paso	William H. Harris
Vernon Regional Junior College	Hobie McMonigal
West Texas State University	Myron Dees

CONSULTANTS

Dr. Donald J. Merki, Professor
Health Education Department
Texas Woman's University

Dr. Betty Tevis, Chief
Heart Health Education in the Young
American Heart Association, National Center

Dr. Dale W. Evans, Coordinator
Health Education Program
University of Houston

Dr. Janice C. Williams, Coordinator
Health Education Program
Texas A & I University

Dr. Parris R. Watts, Coordinator
Health Education Program
University of Missouri

SPECIAL RECOGNITION

Dr. Allen Henderson, Assistant Professor
Department of Psychology
Texas Wesleyan College

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SOURCES OF ASSISTANCE AND SUPPORT

Dr. William H. Koehler
Vice Chancellor for Academic Affairs
Texas Christian University

Dr. Larry D. Adams, Interim Associate Dean
University for Graduate Studies and Research
Texas Christian University

Dr. Herbert F. LaGrone, Dean
School of Education
Texas Christian University

Dr. Gerald E. Landwer, Chairperson
Department of Kinesiological Studies
Texas Christian University

Dr. Ivan F. Taylor, Academic Computer Consultant
Computer Center
Texas Christian University

Aidan O. Dunleavy, Assistant Professor
Department of Kinesiological Studies
Texas Christian University

Winston L. Cave, Director
Educational Data Center
Texas College and University Systems